Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Online SEOP Polarized 3He for Neutron Applications EARL BABCOCK, JCNS, Munich Germany, S. BOAG, ISIS, Didcot U.K., T.E. CHUPP, FOCUS U-Mich, Ann Arbor MI U.S.A., T.R. GENTILE, NIST, Gaithersburg MD U.S.A., A. PETOUKHOV, ILL, Grenoble France, T.G. WALKER, UW-Madison, WI U.S.A. — ^{3}He spin filters provide unique capabilities in various areas of neutron science. Since polarized ^{3}He experiences nuclear relaxation there is motivation to polarize the 3He in place with SEOP to obtain constant polarization levels and increased time average performance. Aspects of the SEOP process under the most extreme conditions in neutron science, with respect to incident neutron flux, present new challenges and processes to explore. Recently work to explore the effects on the SEOP process of the highest intensity neutron beams available have been done. In that work alkali-metal spin-relaxation processes over an order of magnitude faster than typical alkali-metal spin-relaxation rates were discovered. These rates were higher than one would have expected from prior work with charged particle beams. These high rates, along with a time constant of several minutes for a substantial portion of the alkali-metal relaxation, has lead us to consider mechanisms such as molecule and cluster formation in the cells. An overview and status of that work will be presented.

Thomas Gentile
NIST

Date submitted: 23 Jan 2009 Electronic form version 1.4